

"Environmental Sampling and Analysis in the 21st Century"

16th Annual Waste Testing and Quality Assurance Symposium

WTQA 2000

August 5-10, 2000
Marriott Crystal Gateway,
Arlington, Virginia

Program Committee

Symposium Co-chairs:

David Friedman, U.S. EPA, Office of
Research & Development

Gail Hansen, U. S. EPA, Office of Solid Waste
Larry Keith, WPI

Organics

Barry Lesnik, U.S. EPA, Office of Solid Waste
Frank Allen, U.S. EPA, Region IV

Inorganics

Ollie Fordham, U.S. EPA, Office of Solid
Waste

Quality Assurance

Charles Sellers, U.S. EPA, Office of Solid
Waste

Duane Geuder, U.S. EPA, Office of
Emergency and Remedial Response

General

Kim Kirkland, U.S. EPA, Office of Solid Waste

New Technologies

Deana Crumbling, U.S. EPA, Technology
Innovation Office

Robert Haas, California EPA

Advisory Members

Jerry Parr, Catalyst Information Resources,
L.L.C.

Deb Loring, Severn-Trent Laboratories
Zoe Grosser, Perkin-Elmer



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Introduction

As we prepare to enter the 21st century it is appropriate to look forward and consider the changes that will affect environmental sampling and analysis over the next few years. Certainly advances in new technology will help to provide data that is sometimes more accurate, precise, faster, and cheaper (although not necessarily all of these improvements in any single method). In addition, we need to evaluate what policy-related changes will be wrought by NELAC and PBMS. Thus, we've organized a comprehensive program that focuses on these and related topics. This theme is also continued in the short course offerings. We invite you to join your colleagues from industry, government, and academia to contribute and learn from these discussions. Our goal is to enable you to take back to your work place a clearer understanding of how and where you can use forthcoming changes to improve your productivity.

Opening Reception concurrent with Opening Tabletop Exhibition

Monday, August 7, 2000; 5:00 pm - 7:00 pm

The opening reception follows the plenary session and is concurrent with the opening of the Tabletop Exhibition. Join us for complimentary hors d'oeuvres and soft drinks to meet your fellow conferees, exhibitors, and EPA officials. A cash bar will also be available.

Special Sessions

Special sessions on New Technologies and how they will impact environmental sampling and analysis in the near future are covered in two sessions. The first session is titled **"Where is Technology Going in 2005?"** Speakers in this session will emphasize how we can work smarter by taking advantage of new instruments, techniques and sensors to get faster, cheaper and better data. The second session is titled **"Business Ramifications."** Speakers in this session will share their perspectives on how the new technologies covered in the first session will affect the way business is conducted in the next five to ten years. Two other special sessions will cover other current topics of

interest. A session on **"Lab Accreditation"** will focus on the changes in operations that will occur from NELAC activities such as reciprocal laboratory accreditation by states, the laboratory proficiency testing program, and customer perceptions and concerns about scientific misconduct. The fourth special session is titled, **"QA Then, Now, and Next"**. Historical perspectives of past and present QA protocols will be discussed with a focus on future changes being manifested by Performance Based Measurement System (PBMS).

Short Courses and Exams

Saturday, August 5

Basic GC (parts I & II),

9:00 am - 4:00 pm, Barry Lesnik, Joe Solsky, Dennis Gere,
Instructors

\$175/person pre-registration, \$225/person on-site

This course will cover the most important basic principles that affect GC analyses and how to avoid inappropriate practices. It includes the initial steps of how to weigh samples correctly and to make quantitative transfers of samples, basic chromatographic principles and basic laboratory operations. Topics covering the

instrumentation itself include the components of a GC, troubleshooting, and instrument maintenance. Successful chromatographic analysis topics will include an overview of sample preparation methods, calibration options, column selection and column maintenance.

Sunday, August 6

Analytical Strategy for the RCRA Program: A Performance-Based Approach,

9:00 am - 12:00 pm, Barry Lesnik, Instructor,
\$95/person pre-registration, \$125/person on-site

This course is directed toward professionals in both the regulatory and regulated communities who routinely deal with sampling and analysis issues for the RCRA Program. It would be helpful to have knowledge of the general principles of basic RCRA analytical methods. The purpose of this course is to attempt to correct several misconceptions that abound in both the regulatory and regulated communities about regulatory requirements regarding the selection and use of SW-846 methods for RCRA applications. Topics to be covered include: 1) what constitutes a RCRA Hazardous Waste; 2) driving reasons for performing RCRA analyses; 3) what SW-846 is and is not; 4) what constitutes an "EPA-approved" method; 5) flexibility of RCRA methods; 6) when the use of SW-846 methods is mandatory and when it is not; 7) a brief overview of the regulatory process; 8) comparison of SW-846 methods with CLP and Office of Water methods; 9) factors determining appropriate choice of analytical methods; and 10) what should be included in the analytical component of a RCRA Sampling and Analysis Plan.

Basic GC (parts III & IV),

1:00 pm - 4:00 pm, Barry Lesnik, Joe Solsky, Dennis Gere,
Instructors (continuation of course, see above for course description and registration fees)

Advanced Sample Preparation for Chromatography,

9:00 am - 4:00 pm, Harold McNair and Larry Taylor,
Instructors,
\$145/person pre-registration, \$195/person on-site

This comprehensive one-day course is a condensed version of a 3 day ACS lecture/lab program held at Virginia Tech each year. The main topics discussed are Supercritical Fluid Extraction (SFE), Solid Phase Extraction (SPE), Solid Phase Microextraction (SPME) and Microwave Assisted Extraction (MAE). Following an introduction to principles involved and instrumentation required, typical applications will be shown. The format of the course includes lectures interspersed with a few short videos. A comprehensive notebook with copies of all overheads, extensive literature references and product bulletins from the main suppliers of instrumentation will be provided. An important feature of this course will include open discussion of other sample preparation techniques as well as individual problems that participants and others have encountered as real world samples. Both instructors are professors of chemistry at

Virginia Tech; both have taught numerous ACS and in-house short courses, and both are members of the Virginia Tech Academy of Teaching Excellence.

Monday, August 7

Certification Exams for Environmental Analytical Chemists and Technicians,

9:00 am - 12:00 pm

Candidates for certification exams must apply in advance and have education and experience evaluated by a Credentials Committee before sitting for examination. The application fee is \$50. Once an application is approved, the examination fee is \$100. The evaluation process takes 4 to 6 weeks to complete. An application/information packet should be requested ASAP by an email sent to NRCC6@aol.com. Give your name and postal mailing address and specify which exam you wish to take.

Assuring Ethical Practices in Environmental Laboratories,

8:30 am - 12:00 pm, Nancy Wentworth and Jack Farrell,
Instructors,
\$95/person pre-registration, \$125/person on-site

For the first time accreditation standards (NELAC) require laboratories to have documented 'ethics training' programs and 'a proactive program' for the prevention and detection of improper, unethical or illegal practices. Further, the most recent EPA OIG report, 'Laboratory Fraud Detection and Deterrence' (June 1999) stresses that values, ethics training and ethical practices are keys to the prevention of laboratory wrongdoing. This is a critical issue affecting both government and commercial laboratories. How does management implement 'a proactive program' to meet these standards? What do State assessors look for when assessing to the NELAC standards? How do you keep the one 'rogue' employee from performing scientific misconduct? This short course explores this important issue and helps answer these questions.

Discussion topics include potential causes of scientific misconduct, examples of improper practices, and specific practices designed for early detection, resolving ethical dilemma, differentiating between proper and wrongful practices and the role of an effective quality system in fostering appropriate laboratory performance or operations. Auditors, lab managers, senior chemists and QA managers will benefit from this sharing of examples and successful detection systems. Ample time will be provided for questions and discussion of real life examples. This program is being presented by Ms. Nancy Wentworth, EPA Quality Staff, and Jack Farrell, Analytical Excellence, Inc.

HPLC and LC/MS Workshop,

8:30 am - 12:00 pm, Joe Romano, Instructor,
\$95/person pre-registration, \$125/person on-site

This half day workshop will stress the fundamentals of HPLC with emphasis on key applications for environmental analysis. Recent advances in solvent delivery, interface technology, sample preparation, and column chemistry make HPLC and LC/MS

powerful tools for environmental analysis. LC/MS principles of operation and MS detection will also be discussed. Updates to SW-846 Test Methods using HPLC and LC/MS will be covered, providing the latest advances in using this methodology for environmental analysis. The workshop will include a slide lecture presentation followed by an instrument and software demonstration. Topics covered include:

I. Fundamentals of HPLC (Solvent and Sample Management, Column Chemistry, Detector Technology, and Information Management)

II. Sample Preparation (Solid Phase Extraction and GPC Cleanup - EPA Method 3640A)

III. HPLC Analysis Including Updates to USEPA HPLC Methods - Sample Preparation, Column Chemistry, and Detection Techniques for:

* Aldehydes and Ketones (formaldehyde) -EPA Method 8315A

* Nitroaromatics & Nitramines (explosives) -EPA Method 8330A

* Polynuclear Aromatic Hydrocarbons (PAHs) - EPA Method 8310

* Carbamates (pesticides) - EPA Method 8318

IV. Fundamentals of LC /MS will include MS Detection by (1) Electron Ionization (EI) and Atmospheric Pressure Ionization (API). Each technique will include discussions of the theory of operation and its advantages and disadvantages. API discussions will cover both chemical ionization and electrospray ionization techniques.

V. LC/MS Applications for Environmental Analysis will cover the latest applications involving Benzidines & N-pesticides (EPA Method 8325), PAHs, Carbamates (EPA Method 8321B), Pesticides, and the newly emerging issues of Endocrine Disruptions.

Thursday, August 10

Analytical Strategy for the RCRA Program: A Performance-Based Approach,

9:00 am - 12:00 pm, Barry Lesnik, Instructor,

\$95/person pre-registration, \$125/person on-site (see above for description of course)

PBMS Training Workshop,

1:00 pm - 4:00 pm, Barry Lesnik, Instructor,

\$95/person pre-registration, \$125/person on-site

This course has a dual focus, i.e., it will address PBMS from an Agency overview and more specifically how OSWER will further incorporate PBMS into its programs. Basic topics to be covered include: 1) What is PBMS? 2) What are the goals of PBMS? 3) How does PBMS work? 4) How will PBMS affect both the regulators and the regulated community? 5) How will PBMS change the current way of doing business? 6) Implementation of PBMS in OSWER and other Program Offices. Historically, the hazardous waste program offices in the US EPA, the Office of Solid Waste (OSW) and Superfund, have allowed the most flexibility of all of the Agency's offices in the use of analytical methods. This is because the Hazardous Waste Programs deal with a wide variety of media and matrices including stack emissions, ambient air, groundwater, organic liquids and

sludges, incinerator ash, soils, etc. A flexible approach to the use of analytical measurements based on the demonstration of the ability to meet application-specific performance requirements, rather than on strict adherence to published methods, was necessary to meet program needs. This course discusses how this flexibility fits in with the PBMS approach for the Hazardous Waste Programs and what actions are being taken to move to a full PBMS approach including responsibilities of the regulators and the regulated community under PBMS.

Data Auditing, Current and Future,

9:00 am - 4:00 pm, Marlene Moore, Instructor,

\$145/person pre-registration, \$195/person on-site

The objective of the course is to present various data auditing processes performed for method compliance programs and Performance Based Measurement Systems (PBMS).

Data auditing is usually limited to the laboratory quality control performance as stated by the promulgated method or program. These data auditing processes review quality control performance. The most frequently used model for data auditing is the data validation specifications defined as part of the EPA Contract Laboratory Program (CLP), Functional Guidelines.

Starting with the move to Performance Based Measurement Systems (PBMS) many data users are now requesting more than just data validation. Data users now require information related to the verification, assessment, usability or application of the data in order to make final decisions. The changing definitions and application of data auditing is now based on the data users needs and requests. Each data user now defines the criteria for data auditing. These may include any one or a combination of data validation, verification, assessment and usability criteria. Data auditing is now a combination of data verification, data validation, and data review techniques.

The course materials present a variety of data auditing techniques and suggest combinations of these data auditing techniques for various applications. Descriptions of data verification, validation, review and assessment are part of the course.

The traditional data auditing practices for method compliance do not include data assessment, usability or evaluation for meeting the measurement objectives. Discussions include suggested techniques for data auditing to provide the necessary information for making decisions under the PBMS approach..

The course includes the review of quality control criteria, quality assurance criteria and other related information used for data auditing. In addition, the course will compare the data auditing approaches for method compliance versus PBMS. The course combines lecture and group exercises to demonstrate the various interpretations of data auditing practices today.



Location and Travel Information

The Crystal Gateway Marriott is ideally situated just minutes from downtown Washington, DC, one mile from Washington's Ronald Reagan National Airport, 30 minutes from Dulles International Airport, and 45 minutes from Baltimore-Washington International Airport. The hotel is linked to the Metrorail system through an indoor connection from the hotel lobby. Washington's Capital Beltway is four miles away.

Washington, DC, is famous for its monuments, museums, government buildings, and historical sites. Beyond this is a city rich in tradition, arts, and culture. The abundance of activity in the Nation's Capital makes it the ideal destination for business or leisure travel. Washington is located 35 miles from Baltimore, 135 miles from Philadelphia, and 230 miles from New York City. For general tourist information in and around Washington, DC, call the Visitor Information Center at (202) 789-7000 from 9 am to 5 pm, EST, Monday through Saturday.

Rail Transportation

Washington's beautifully restored Union Station provides Amtrak Service. Although group fares are not available, you may call (800) 872-7245 for more details or to make reservations.

Shuttle Bus /Taxi /Public Transportation

Washington's Ronald Reagan National Airport is a 5 minute ride by complimentary shuttle to the **Crystal Gateway Marriott**. Taxi fares from Dulles International Airport are approximately \$60 one way. Taxi fares from Baltimore-Washington International Airport are approximately \$80 one way. The Metrorail (subway) System also has a stop located at the hotel (Crystal City/Blue or Yellow line). The Metro runs from 5:30 am until midnight, Monday through Friday; 8:00 am until midnight on Saturday; and 10:00 am until midnight on Sunday. Base fare for the Metro is \$1.10. For specific bus and subway information, contact Metro Transportation at (202) 637-7000.

WTQA 2000 Registration Information

The deadline for advanced registration is July 14, 2000. Please check the appropriate boxes for registration fees and short courses on the form in this brochure and fax or mail the form to the **WPI**, 2000 Kraft Drive, Suite 2100, Blacksburg, VA 24060, to the attention of **Ms. Eileen O'Toole**. She may be called at 540-557-6099 or faxed at 540-557-6043. An on-line registration form is also available on the Internet at <http://www.wpi.org/wtqa>. On-site registration may be made at the **Crystal City Marriott Hotel** during the conference. Please refer to the dates and times listed in the Symposium-at-a-Glance section for on-site registration.

Refunds

Cancellation requests must be received in writing. Cancellations received prior to July 14, 2000 will receive a full refund. Cancellations after July 14 through July 30, 2000 will be assessed a \$50 cancellation fee. No refunds will be issued after

July 30, 2000.

Hotel Accommodations

The symposium has reserved rooms at a special conference rate at the **Crystal Gateway Marriott** in Arlington, VA. All hotel reservations should be made directly with the hotel. The **Crystal Gateway Marriott** is located at 1700 Jefferson David Highway, Arlington, VA 22202. Phone: (703) 920-3230 or (800) 228-9290.

The hotel entrance is located on South Eads Street between 15th and 20th Streets. When making your reservation, be sure to identify your affiliation with WTQA 2000 or the WPI/EPA symposium, in order to receive the special room rate of \$129 (+ tax) /single or double. All requests for accommodations must be made no later than July 14, 2000, in order to assure the conference rate. The hotel will not hold any reservations unless a guaranteed by a major credit card or a one nights deposit. The deposit will be forfeited if you do not arrive or fail to cancel your reservation prior to 6 pm on the day of arrival.

Facilities for the Disabled

The **Crystal Gateway Marriott** is readily accessible and has appropriately designed sleeping rooms. Please inform the hotel during registration if you have special needs.

Speaker Information

Each meeting room will be equipped with a LCD projector (for displaying computer-generated presentations), screen, podium with remote slide control, pointer, and microphone. If another piece of audiovisual equipment is needed, (e.g., a 35 mm slide projector, or an overhead projector), please contact the **WPI** at (540) 557-6018 at least three weeks in advance.

An audiovisual office (Speaker Ready Room) with slide viewing facilities will be located on-site. Carousels will be available for loan to speakers wishing to load their slides prior to their session. The Speaker Ready Room will be open Monday through Wednesday from 7 am - 4 pm.

Additional Information/Updates to Mailing List

Those interested in additional meeting information or placing/updating your name on the mailing list for future WTQA symposia, should contact **Dr. Lawrence H. Keith** at the **WPI**, 2000 Kraft Drive, Blacksburg, VA, 24060. Phone (540) 557-6095; fax (540)-557-6043; or visit the WTQA Internet web page at <http://www.wpi.org/wtqa>.



Opening Plenary

Monday, August 7, 2:00 pm - 4:30 pm

2:00 pm - 2:30 pm Welcome Remarks - **David Friedman**, Office of Research & Development, **Gail Hansen**, Office of Solid Waste, and **Larry Keith**, WPI

2:30 pm - 3:00 pm **Elizabeth Cotsworth**, Director, Office of Solid Waste - Update on OSW Rulemakings

3:00 pm - 3:30 pm **Norine Noonan**, Assistant Administrator, Office of Research & Development - Federal Policy on Scientific Misconduct

3:30 pm - 4:00 pm **Jackie Sample**, Dept. of Defense - Improving DOD Environmental Data Quality: Progress and Opportunities

4:00 pm - 4:30 pm **Joan Cassidy**, Executive Director of ACIL - ACIL's Perspective on Future Trends in Commercial Environmental Sampling and Analysis

Opening Reception and Table Top Exhibits

Monday, August 7, 5:00pm - 7:00 pm

Complimentary hors d'oeuvres, soft drinks and a cash bar served in the exhibit hall

Organic I Session

Tuesday, August 8; 8:15 am - 12:00 pm

Barry Lesnik, Chairperson

8:30 - 9:00 Overview of Organic Methods Program, **B. Lesnik**

9:00 - 9:30 Optrode Sensor for TCE, **S. Burge**

9:30 - 10:00 A Novel Sensor System for Measuring VOCs in Air and Water, **P. Lo**

10:00 - 10:30 BREAK

10:30 - 11:00 VOC Sampling, **F. Allen**

11:00 - 11:30 The Effects of Temperature, Sample Container and Preservative on VOCs in Soil, **M. Zimmerman**

11:30 - 12:00 Study of Acetone Production in SW-846 Method 5035 (Low Level) Associated with Various Preservation Techniques and Storage Conditions, **M. Uhlfelder**

QA - Then, Now and Next Session

Tuesday, August 8; 8:15 am - 12:00 pm

Deb Loring, Chairperson

8:30 - 9:00 Determining and Documenting Data Quality (ASTM Effort), **L. Williams**

9:00 - 9:30 DOD/ACIL Efforts in Data Quality, Part I, **C. Groenjes**

9:30 - 10:00 DOD/ACIL Efforts in Data Quality, Part II, **D. Henderer**

10:00 - 10:30 BREAK

10:30 - 11:00 The Electronically Enhanced Assessor - Wearable Computers for Audits, **P. Mills**, **D. Paddock**, **K. Foreman**, **P. Chapman**

11:00 - 11:30 When Does QA Really Assure Data Quality?, **C. Carter**

11:30 - 12:00 Perspective on Changes in Quality Standards, **F. Siegelman**

Organic II Session

Tuesday, August 8; 1:15 pm - 5:00 pm

Frank Allen, Region IV, Chairperson

1:30 - 2:00 Large Volume Injections, **R. McMillin**

2:00 - 2:30 Innovations in Large Volume Injection: Applications of a Chromatographic Zone as an Inlet System for GC/MS, **D. Gere**

2:30 - 3:00 Automated Extraction of Large Samples for Environmental Analysis Using Accelerated Solvent Extraction (ASE), **B. Richter**

3:00 - 3:30 BREAK

3:30 - 4:00 Analytical Method Developments to Support Partitioning Interwell Tracer Testing, **M. Bruce**, **P. Sharkey**, **J. Smith**, **R. Parker**, **W. Kosco**, **J. Thompson**, **G. Swanson**, **A. Tordini**

4:00 - 4:30 Fast High Resolution GC for Environmental Methods: What is Wanted, What is Available, **D. Gere**

4:30 - 5:00 The Pulsed Flame Photometric Detector for the Analysis of Phosphorus Pesticides in Wastewater and Sludge, **N. Kirshen**

Special Lab Accreditation Session

Tuesday, August 8; 1:15 pm - 5:00 pm

Jerry Parr, Chairperson

1:30 - 2:00 Highlights From the NELAC 2000 Annual Meeting, **J. Parr**

2:00 - 2:30 Changes in Laboratory Auditing, **M. Shepherd**

2:30 - 3:00 Changes in Laboratory Operations, **D. Wright**

3:00 - 3:30 BREAK

3:30 - 4:00 Cost of NELAC Accreditation, **B. Meirer**

4:00 - 4:30 PT Issues, **C. Wibby**

4:30 - 5:00 Implications of ISO 17025, **P. Mills**

Organic Posters

Tuesday, August 8, 10:00 am - 4:00 pm (in the exhibit hall)

Authors available from **10:00 am - 11:00 am** and

3:00 pm - 4:00 pm

The Effect of Hydrogen Carrier Gas in the GC/ECD Analysis of Organochlorine Pesticides and PCBs, **E. Boswell**

Taking Advantage of New Technology in GC/MS Volatiles, **P. Conlon**

The Relationship Between BOD, COD, and TOC: Advantages and Disadvantages, **J. Furlong**

Current Measurement Capabilities for Endocrine Disrupting Compounds, **Z. Grosser**

Performance of a Next Generation Vial Autosampler for the Analysis of VOCs in Water Matrices, **E. Heggs**

Making Use of Dissolved Hydrogen Analysis Easier: A New Sampling Procedure, **P. McLoughlin**

Quantitative Analysis of the Chemical Warfare Agent VX in Caustic Wastestreams Generated During Demilitarization Operations, **K. Morrissey**

Freeze-drying of Sediments to Achieve Risk-based Detection Levels for PCBs, PAHS, and Metals, **N. Rothman**

Comparative Analysis of Silcosteel Coated Sample Pathway and Electroform Nickel Sample Pathway in the Tekmar 3100 Sample Concentrator, **G. Smith**

Field Application of ASTM Method D5831 at Fuel Contaminated Sites, **S. Sorini**

General QA Session

Wednesday, August 9; 8:15 am - 12:00 pm

Charles Sellers, Chairperson

8:30 - 9:00 Implementing MQOs Within a DQO Framework, **N. Hassig**

9:00 - 9:30 Field Team Auditing as Part of the Environmental Data Quality Assurance Process, **G. Kirkpatrick**

9:30 - 10:00 Utilizing Field Screening to Meet Objectives During Characterization and Excavation of Allen Harbor Landfill, **K. Peluso**

10:00 - 10:30 BREAK

10:30 - 11:00 Tracking Trends on Proficiency Testing Studies: A Helpful Tool for Assessing and Improving Data Quality, **A. Rosecrance**

11:00 - 11:30 The PBMS, Data Verification and Data Validation, **M. Wolf**

11:30 - 12:00 Ethics Standards for Environmental and Petroleum Testing Labs, **A. Rosecrance**

New Technologies Session I - Where Will We Be in 2005?

Wednesday, August 9; 8:15 am - 12:00 pm

Deana Crumbling and **Robert Haas**, Chairpersons

8:30 - 9:00 Multi-media Approach to Soil Investigation of VOC-contaminated Sites, **F. Zanoria**

9:00 - 9:30 Updating Waste Site Practices, **J. Heimerman**

9:30 - 10:00 On-Site Analysis-Cost Effective and Fast: Case Studies, **I. Rhodes**

10:00 - 10:30 BREAK

10:30 - 11:00 The Business of Making a Lab Field Portable, **C. Crume**

11:00 - 11:30 Expedited Site Characterization and Remediation: An Integrated Approach to Save Time and Headaches, **K. Lynch**, **G. Gervais**, **R. Totorica**

11:30 - 12:00 Developments in Biotechnology for Environmental Analysis, **R. Allen**, **T. Stewart**, **J. Willey**, **D. Rockett**

Inorganic Session

Wednesday, August 9; 1:15 pm - 5:00 pm

Ollie Fordham, Chairperson

1:30 - 2:00 Overview of Inorganic Methods Program, **O. Fordham**

2:00 - 2:30 Monitoring Lead Concentrations in Soils by Anti-Chelate Fluorescence Polarization Immunoassay, **D. Johnson**, **S. Combs**, **J. Parsen**, **M. Jolley**

2:30 - 3:00 Taking Mercury Analysis into the 21st Century with Speciation, **H.M. Kingston**, **H. Boylan**, **Y. Han**, **D. Link**, **S. Bhandrai**, **R. Richter**

3:00 - 3:30 BREAK

3:30 - 4:00 Rapid Trace Metal Analysis of High Wastewater Sludge, **F. Prevatt**

4:00 - 4:30 QC for Elemental Speciation: Monitoring Species Transformation, **D. Huo**, **B. Wyeth**, **H.M. Kingston**

4:30 - 5:00 Ion Chromatography for the 21st Century: Recent Developments for the Determination of Inorganic Anions, **P. Jackson**, **M. Coffey**, **D. Thomas**, **R. Joyce**

New Technologies Session II - Business Ramifications

Wednesday, August 9; 1:15 pm - 5:00 pm

Zoe Grosser, Chairperson

1:30 - 2:00 Ramifications on Commercial Laboratories of New Technologies, **D. Kennedy**

2:00 - 2:30 Environmental Monitoring in Russia and Central Asia, **speaker to be determined**

2:30 - 3:00 Update on PBMS Activities at EPA, **D. Friedman**

3:00 - 3:30 BREAK

3:30 - 4:00 Use of LC/MS for Environmental Applications, **R. Burrows**

4:00 - 4:30 Dynamic Reaction Cell ICP/MS, **V. Conrad**

4:30 - 5:00 Labs: Adapting to Changing Technology, **J. Webb**

QA/Inorganic Posters

Wednesday, August 9, 10:00 am - 4:00 pm (in the exhibit hall)

Authors available from **10:00 am - 11:00 am** and

3:00 pm - 4:00 pm

Inorganic Posters

Field Demonstration Projects for the Evaluation of Alternative Technologies for Providing Continuous Monitoring for N and P in Fresh Water Systems, **T. Barnard**, **L. Hass**, **R. Cook**

Minimizing the Contaminant Charge for Industrial Effluent, **M. Garcia-Reyes**

The Chemistry of TCLP Testing of Fluorescent Lamps, **D. Haitko**, **S. Buddle**, **B. Lui**, **D. Dietrich**

Your Contribution to the CO2 Buildup, **P. Hannan**, **Corrective Action and the Use of XRF**, **S. Northey**

QA Posters

Automated Data Review, Contract Compliance Screening and Environmental Database Management System Software

Applications, **R. Amano**

FASTAC-CLP, **C. Appleby**

Lab Procedures for Analyst Demonstration of Method Proficiency, **N. Gannon**

QA Development for PBMS Oriented Analytical Operation, **L. Litinsky**

Use of Recordable Media for Environmental Electronic Data Validation in the Paperless Laboratory, **G. Santacroce**

Duplicates and/or Split Samples Are Often Taken in Environmental Programs, **D. Svendsgaard**

Demonstrations

Tuesday, August 8, 10:00 am - 4:00 pm and **Wednesday, August 9, 10:00 am - 3:30 pm**

SW-846 CD-ROM (Update IVA and Version 2.0)

Monitoring Science in the RCRA Program:

OSW Methods Team Home Page

PLEASE CHECK THE APPROPRIATE BOX

Before 7/14/00	After 7/14/00	
<input type="checkbox"/> \$295	<input type="checkbox"/> \$375	Not a Member of ACS Environmental Chemistry Division or of ACIL
<input type="checkbox"/> \$275	<input type="checkbox"/> \$355	Member of ACS Environmental Chemistry Division or of ACIL
<input type="checkbox"/> \$75	<input type="checkbox"/> \$75	EPA Employee
<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	Complimentary Registration (For all Speakers and On-site EPA Employees)
<input type="checkbox"/> \$150	<input type="checkbox"/> \$200	One-Day Registration <input type="checkbox"/> Mon <input type="checkbox"/> Tues <input type="checkbox"/> Wed
<input type="checkbox"/> \$30	<input type="checkbox"/> \$30	EPA One-Day Registration <input type="checkbox"/> Mon <input type="checkbox"/> Tues <input type="checkbox"/> Wed
<input type="checkbox"/> \$250	<input type="checkbox"/> \$350	Exhibitor - One Table (You Must Also be Registered for the Conference)
<input type="checkbox"/> \$175	<input type="checkbox"/> \$225	Short Course: Basic Principles of Gas Chromatography (GC) Parts I & II Saturday, August 5, 2000, 9:00 am - 4:00 pm Parts III & IV, Sunday, August 6, 2000, 1:00 pm - 4:00 pm
<input type="checkbox"/> \$95	<input type="checkbox"/> \$125	Short Course: Analytical Strategy for the RCRA Program: A Performance-Based Approach. Course is offered twice. Please indicate day: <input type="checkbox"/> Sunday, August 6, 2000, 9:00 am - 12:00 pm <input type="checkbox"/> Thursday, August 10, 2000, 9:00 am - 12:00 pm
<input type="checkbox"/> \$145	<input type="checkbox"/> \$195	Short Course: Advanced Sample Preparation Sunday, August 6, 2000, 9:00 am - 4:00 pm
<input type="checkbox"/> \$95	<input type="checkbox"/> \$125	Short Course: Assuring Ethical Practices in Environmental Laboratories Monday, August 7, 2000, 8:30 am - 12:00 pm
<input type="checkbox"/> \$95	<input type="checkbox"/> \$125	Short Course: HPLC and LC/MS Workshop Monday, August 7, 2000, 8:30 am - 12:00 pm
<input type="checkbox"/> \$95	<input type="checkbox"/> \$125	Short Course: PBMS Training Workshop Thursday, August 10, 2000, 1:00 pm - 4:00 pm
<input type="checkbox"/> \$145	<input type="checkbox"/> \$195	Short Course: Data Auditing, Current and Future Thursday, August 10, 2000, 9:00 am - 4:00 pm
<input type="checkbox"/> \$150	<input type="checkbox"/> NA	Certification Exam for Environmental Analytical Chemists and Technicians Monday, August 7, 2000, 9:00 am - 12:00 pm
<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	Opening Reception and Opening Tabletop Exhibition Monday, August 7, 2000 5:00 pm - 7:00 pm

TOTAL AMOUNT ENCLOSED

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WPI

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Blacksburg, VA 24060

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Register on the Internet or Obtain Additional Information at <http://www.wpi.org/wtqa>

Saturday, August 5 8:00 am - 9:30 am 9:00 am - 4:00 pm	Registration for Short Courses Short Course: Basic Principles of GC - Parts I & II	10:00 am - 10:30 am 12:00 pm - 1:15 pm 1:15 pm - 5:00 pm 1:15 pm - 5:00 pm 3:00 pm - 3:30 pm	Break (organic posters/table top displays; authors available 10:00 - 11:00) Lunch Break Special Lab Accreditation Session Organic II Session Break (organic posters/table top displays; authors available 3:00 - 4:00)
Sunday, August 6 8:00 am - 1:30 pm 9:00 am - 12:00 pm 9:00 am - 4:00 pm 1:00 pm - 4:00 pm	Registration for Short Courses Short Course: Analytical Strategy for the RCRA Program Short Course: Advanced Sample Preparation Short Course: Basic Principles of GC - Parts III & IV	Wednesday, August 9 7:00 am - 5:00 pm 8:15 am - 12:00 pm 8:15 am - 12:00 pm 10:00 am - 10:30 am 12:00 pm - 1:15 pm 1:15 pm - 5:00 pm 1:15 pm - 5:00 pm 3:00 pm - 3:30 pm	Registration Open General QA Session New Technologies Session I - Where Will We Be in 2005? Break (QA posters/inorganic posters/table top displays; authors available 10:00 - 11:00) Lunch Break Inorganic Session New Technologies Session II - Business Ramifications Break (QA posters/inorganic posters/table top displays; authors available 3:00 - 4:00)
Monday, August 7 7:00 am - 4:00 pm 8:00 am - 12:00 pm 9:00 am - 12:00 pm 8:30 am - 12:00 pm 8:30 am - 12:00 pm 12:00 pm - 1:30 pm 2:00 pm - 4:30 pm 5:00 pm - 7:00 pm	Registration Open SW-846 Workgroups (Organic, Inorganic - Closed Meeting) Certification Exams for Environmental Analytical Chemists and Technicians Short Course: Assuring Ethical Practices in Environmental Laboratories Short Course: HPLC and LC/MS Workshop Lunch Break Opening Plenary Session Opening Reception and Table Top Displays	Thursday, August 10 8:00 am - 12:00 pm 9:00 am - 12:00 pm 9:00 am - 4:00 pm 1:00 pm - 4:00 pm	Registration for Short Courses Short Course: Analytical Strategy for The RCRA Program Short Course: Data Auditing, Current and Future Short Course: PBMS Training Workshop
Tuesday, August 8 7:00 am - 5:00 pm 8:15 am - 12:00 pm 8:15 am - 12:00 pm	Registration Open QA - Then, Now and Next Session Organic I Session		



Waste Policy Institute
2000 Kraft Drive
Suite 2100
Blacksburg, VA 24060
ATTN: Ms. Eileen O'Toole

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